2. Project Purpose

The purpose of the Detroit Intermodal Freight Terminal project is to support the economic competitiveness of southeastern Michigan and the state by improving freight transportation opportunities and efficiencies for business, industry and the military. The goal is to ensure that Southeast Michigan has a facility – or facilities – with sufficient capacity to provide for existing and future intermodal demand.

The needs of the U.S. economy and national defense are undergoing a significant change. Modern supply chain logistics, just-in-time manufacturing and deployment, and leaner organizations have revolutionized the way industry and the military transport freight. Concurrently, intermodal freight transport also is undergoing change. It is growing, spreading into new markets and restructuring to meet the needs of its customers. As highway and rail systems are modernized and integrated, supporting the needs of business, industry and the military – particularly in the way they contribute to the quality of life, the economy and national defense – continues to be the primary justification for public investments in the transportation system.

Detroit is one of the top ten intermodal markets in the nation. The Detroit market has characteristics that could cause intermodal traffic to grow faster than the national average including its role as the automotive capital of the world and strategic position on the Canadian border. Intermodal traffic could grow faster and to greater levels in Detroit if adequate capacity existed.

It is the role of government (in this case MDOT) to ensure that the businesses and industries involved in the freight transportation segment of the economy continue to have access to the market (i.e., customers, workers, shippers, and the like). This, in turn, supports jobs and ensures maintenance of the national defense as well as a high quality of life for the region's citizens. MDOT's role is served by engaging in the DIFT Project to improve the connectivity between modes through provision of a better interface between the public road system and the private rail system; and, to facilitate the development of significant capacity at the region's intermodal facilities.

3. Project Need

3.1 General Information

The Detroit Intermodal Freight Terminal (DIFT) Project has been ongoing for several years. The growth of U.S. intermodal traffic (Figures 3 and 4), the enormous influx of double-stack trains and marine containers, and the even more recent entry and rapid growth of rail-truckload initiatives have all raised questions about the adequacy of intermodal terminals to handle traffic increases, and to do so efficiently.

In the 1980s, railroads consolidated their intermodal service networks into fewer, larger hub terminals. Railroads saw an opportunity to consolidate enough volume in one location to justify lift machines and other costly improvements/equipment, and to eliminate smaller facilities. Such is the current situation where intermodal activity at the smaller Norfolk Southern Oakwood intermodal terminal in Southwest Detroit was shifted to the Livernois-Junction Yard. It is assumed NS will shift the intermodal activities at its Delray and Triple Crown (Melvindale) terminals to the Livernois-Junction Yard provided adequate improvements can be made.

Now the challenge is to not just find capacity for future intermodal growth, but to also plan for this growth so that rail and highway freight facilities operate as a system.

In response to the challenge, the Michigan Department of Transportation engaged Mercer Management Consultants in 1993/1994 to respond to the Michigan Legislature's initiative to address intermodal transportation in the Greater Detroit Area (GDA). The results of that, and subsequent work recognized that:

- Detroit is one of the top ten markets in the nation for intermodal freight (trailer or container loads moving by rail).

- Because of the auto industry, Detroit leads the nation in its use of "RoadRailer" technology, i.e., a truck trailer becomes a rail car by placing rail wheels underneath.

- One-third of Detroit's intermodal traffic is trucked to and from other cities. This means it travels by rail to Chicago, Toledo, or Windsor for example, and then is trucked to Detroit. Better intermodal service could result in a diversion of some of this intermodal activity to Detroit because of reduced transportation costs. This would eliminate some trucks from Michigan's roads which could reduce congestion and help ease the need for added capacity on the roadway network.

- The improvement of the Detroit-Windsor tunnel and the recent construction of a new Port Huron-Sarnia rail tunnel enhance intermodal access to/from the Detroit area.

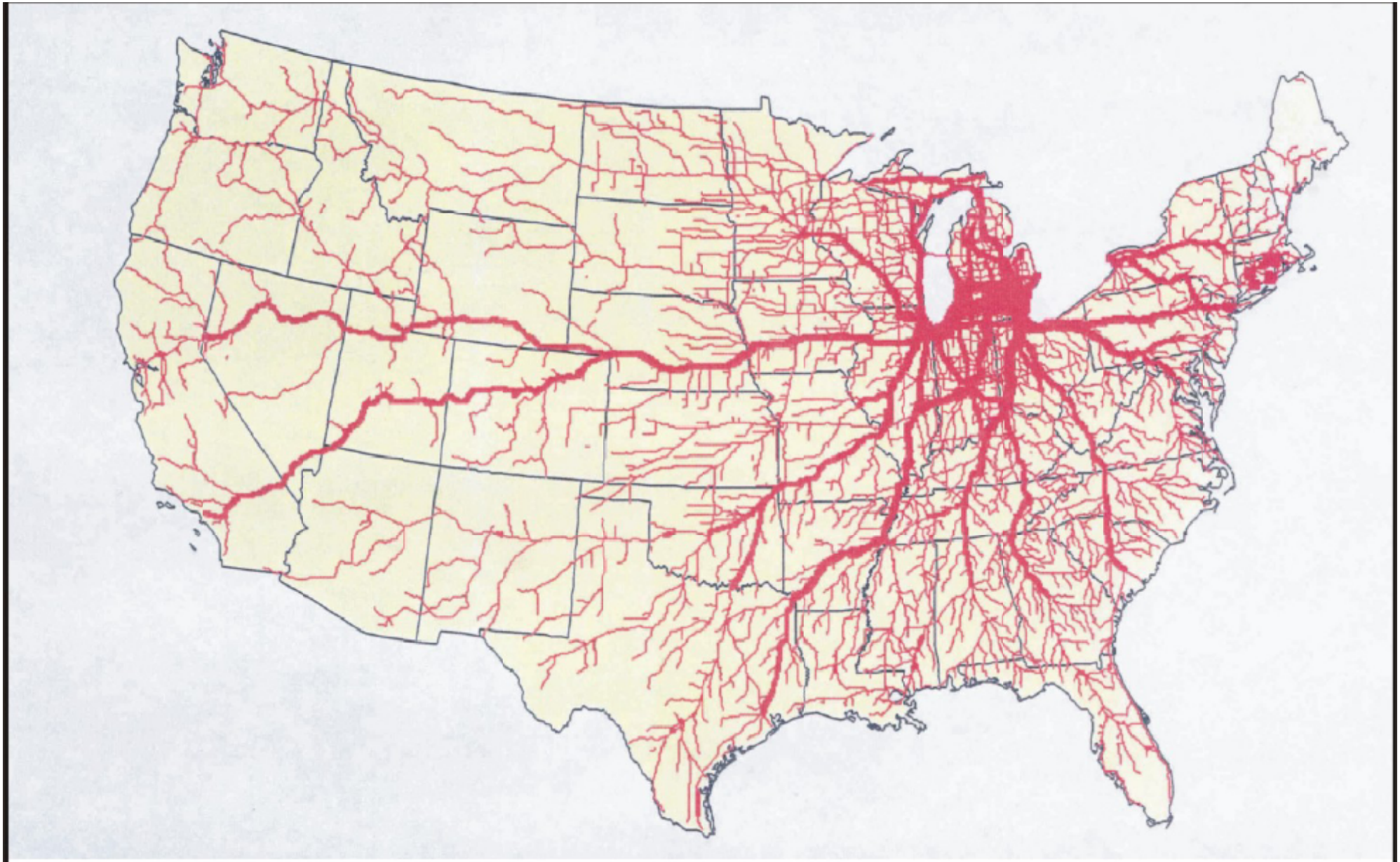
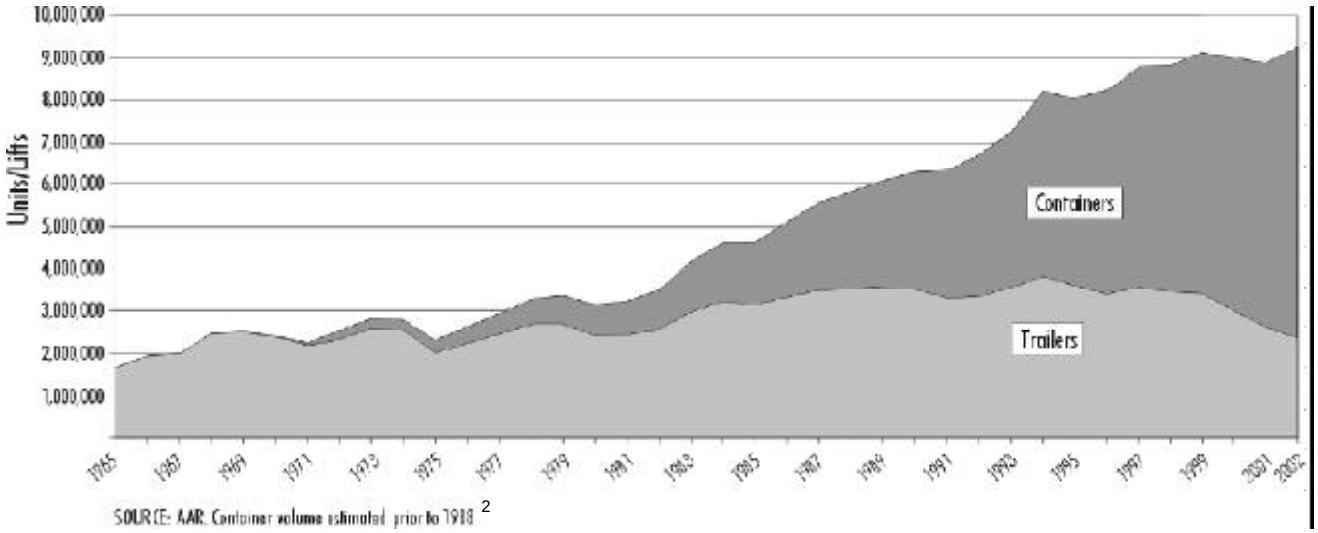


Figure 3
Highway Flows of Both Domestic and International Freight Moving into/from Michigan

SOURCE: Federal Highway Administration Office of Freight Management and Operations

Figure 4
U.S. Rail Intermodal Traffic



[2]

3.2 Capacity Versus Demand

The following discussion deals with intermodal terminal activity in the Greater Detroit Area (GDA). It is presented without identifying each terminal because of the proprietary nature of the information.

The Mercer Management Consulting work assessed the 1993/1994 conditions of intermodal transportation in the Greater Detroit Area (GDA) and defined a course for the future. The study found that the volume of intermodal traffic, called lifts,[3] was 335,000 in 1994 which was an 18 percent increase over the 1992 volume of 283,000 lifts. In 1998, the volumes had grown to approximately 400,000 lifts or another 16 percent growth over 1994. The number of lifts then declined and rebounded to 348,000 in 2002 mainly because of the railroads' decision to truck more GDA products to Chicago, the economic conditions of the period since 2000, and the increasing attention to the risk of terrorist attacks (Table 1). Nevertheless, the actual number of lifts in 2000 is about five percent higher than the low end of the Mercer forecast made in 1993. Those forecasts indicated the intermodal capacity of the GDA would be exceeded in 2000.

A recent inventory of intermodal activity and capacity at each of six existing terminals ratifies the earlier Mercer forecast in that the overall regional demand is at capacity, while three of six terminals lack adequate capacity today.[4] In the Greater Detroit Area, capacity and operational issues facing Norfolk Southern caused it to shift its Oakwood terminal intermodal activity to the larger Livernois-Junction Yard, which NS owns in partnership with CSX. It is assumed NS will shift to the Livernois-Junction Yard its Triple Crown and Delray intermodal operations provided adequate improvements can be made. The Triple Crown and Delray intermodal terminals are now experiencing demand at least equal to their capacity. NS has no plans to expand the Delray or the Triple Crown Terminals.

[2]Data are also available from the Intermodal Association of North America which show the same trends but include traffic for all of North America, not just the U.S.
[3]A lift is the transfer of a trailer or container to or from a rail car.
[4]A fourth terminal was at capacity but, due to recent shifts in business, is now operating below capacity.

Table 1
2002 Lift Summary

Terminal[1]	Lifts
1	60,000
2	55,000
3	83,000
4	77,000
5	25,000
6	48,000
Total	348,000

Source: The Corradino Group of Michigan, Inc.
[1]Terminals are those that serve intermodal activity in 2002, exclusive of Mazda, which is not available for commercial use.

An assessment of the demand/capacity relationships at the four intermodal terminals that will serve the region in the future under the No Action scenario is shown on Table 2. A range of demand is provided based on varying growth rates forecast by independent sources. Table 2 also illustrates the maximum possible capacity as provided by the terminal operator. It is the most the terminal can handle with the densest use of the existing terminal space, i.e., stacking of containers/parking of trailers, and without additional property. These data indicate a lack of capacity at each yard and an overall deficit in the region of from 67 percent to more than 120 percent by 2025 (Table 2). The deficit in capacity in 2025 would be reduced by about 120,000 annual lifts if the Triple Crown and Delray terminals are continued in intermodal use. But, the need for additional capacity would still be evident.

Table 2
Detroit Intermodal Freight Terminal Project
Demand vs. Capacity
No Action Scenario

Terminal[1]	2025 Outlook of Lift Activity (Demand)		Lift Capacity	Lift Deficiency
	AVT-Based[2]	Reebie-Based[3]		
W	458,000	341,000	150,000	191,000 to 308,000
X	58,000	43,000	25,000[4]	18,000 to 23,000
Y	178,000	133,000	95,000	38,000 to 83,000
Z	111,000	83,000	75,000	8,000 to 36,000
Total	805,000	600,000	345,000	255,000 to 460,000
				74% to 133%

Source: The Corradino Group of Michigan, Inc.

[1]Terminals listed are those four, following the assumed NS consolidation at the Livernois-Junction Yard, that will serve as intermodal facilities.
[2]Arbor Vista Transportation forecast is based on 348,000 lifts per year in 2002 increased at annual growth rates based on data from the Intermodal Association of North America and the American Trucking Association.
[3]Reebie outlook for 2000 to 2010 intermodal growth is 29 percent. Reebie is an economic analysis firm that collects and analyzes commodity flow data, economic trends, and the like. 2025 outlook is an extension of this trend. The Reebie-based growth rate is consistent with forecasts of heavy duty trucks developed by IBI of Toronto for the Bi-National Planning/Need Feasibility Study.
[4]Capacity of 40,000 lifts is reduced to 25,000 lifts per year when the lease with Crowne Enterprises is terminated on June 30, 2003.

3.3 Alternatives

From passage of TEA-21 in 1998 (Public Law 105-178, Section 1602, High Priority Project [HPP] 1221) until the fall of 2002, the federal and state efforts on the DIFT project were directed at a single terminal in Southwest Detroit, Wayne County at the Livernois-Junction Yard. In March 2002, the federal Notice of Intent was published to advise the public that an Environmental Impact Statement (EIS) will be prepared. It listed one alternative to taking no action, i.e., "refinements to Rail Strategy 3," as identified in the Detroit Intermodal Freight Terminal Project Feasibility Study, Technical Report No. 4, i.e., consolidation of regional intermodal operations at the Livernois-Junction Yard. In the latter part of 2002, the Federal Highway Administration, following a resource agency scoping meeting held on September 19, 2002, issued the following position:

> "The overall goal of the DIFT is to enhance intermodal operations and economic competitiveness of SE Michigan. In fulfilling this goal, we (FHWA) believe treating the RRs with equity is sound public policy. This policy does not [emphasis added] define the starting point, rather it places a condition on the outcome, similar, for example, to assuring that air quality standards will be met. In our (FHWA) view this policy does not pre-limit [emphasis added] the EIS to investigating only a single solution. The EIS must consider a range of practical alternatives. Ultimately, the EIS process will result in a preferred alternative and the EIS must clearly articulate the basis for the preferred alternative."

Subsequently, the approach to alternatives was updated to include the following:

1) Taking no action, which involves the railroads proceeding with improvements and developments on their own schedule to meet their current intermodal market demands; 2) Improving/expanding existing intermodal terminals, mentioned above, at their current locations but with federal funding assistance and oversight; and 3) Consolidating regional intermodal operations at the Livernois-Junction Yard, with federal funding assistance and oversight. The last alternative is to be a refinement of the concept identified as Rail Strategy 3 in the Detroit Intermodal Freight Terminal Project Feasibility Study, Technical Report No. 4.

A revised DIFT Notice of Intent to cover the updated approach was issued by FHWA on March 13, 2003.

3.4 Need

It is noteworthy that the growth associated with the No Action alternative is expected to result in intermodal activity of 600,000 to 800,000 lifts annually. Consistent with Table 2, it cannot be handled without the railroads expanding existing terminals. If the railroads choose not to expand the existing terminals, then the activity is likely to be lost to the region, for example, for CSX to Cleveland, for NS to Toledo, and for CP to Chicago.

Alternative 2 would allow the existing terminals to expand with federal funding assistance/oversight. In this scenario, it is expected regional intermodal freight, to be divided among the railroads, will range up to 900,000 lifts per year.

If consolidation were to occur (i.e., Alternative 3), the regional intermodal activity is expected to continue to grow up to 1.2 million lifts per year in 2025. Work to date on a concept for consolidation at the area of the Livernois-Junction Yard indicates the terminal's potential capacity is about 1.4 to 1.5 million lifts annually without depending on the practice prevalent today in the GDA of dense container stacking/trailer parking. So, the conceptual layout developed allows for growth beyond the 2025 horizon. That concept will be discussed further in Chapter 4.

In summary, under Alternatives 2 and 3, increased intermodal capacity will be available in the Greater Detroit Area (now one of the top ten intermodal centers in America) to better support the regional economy.

Because freight transport is not just about facilities but also about how the system operates, there is a need to provide a better interface between the public road system (primarily interstate freeways) and the intermodal rail facilities. There is a need to provide better coordination between and among rail terminals. There is a need to locate and coordinate services so they can best meet the needs of businesses, industries, and the U.S. military. Individual private businesses, such as rail companies, are not expected to take responsibility for these system issues. This is the role of government. The types of connections to be considered in addressing the need for better connectivity are (Figure 5):

- Rail-to-Rail (CN, CP, CSX, NS)
- Rail-to-Highway (I-75, I-96, I-94)
- Rail-to-Cross-Border Connections
  - Bridges (Blue Water, Ambassador and possible new crossing)
  - Tunnels (Port Huron-Sarnia and Detroit-Windsor)

The rail-to-highway issues, while specific to each alternative, affect connections to I-75/I-96 and I-94 in any case. For example, channeling trucks directly to I-96 at the CP/Oak terminal will ease traffic in such streets as Davison and Schoolcraft. Likewise, better connections to I-75 and I-94 will ease traffic on such streets as Livernois/Dragoon at the Livernois-Junction Yard.

As an example of rail-to-rail connectivity issues, consider a recent *Trains* magazine article which reported: "The auto shippers at the core of Detroit's rail business demand precision, mindful of the feeding times of their assembly plants. Railroads respond with better scheduling and innovations. Now, if the trains could just get through the city! For railroads, Detroit is the proverbial bowl of spaghetti. Main lines entangle and intertwine in seemingly impossible combinations."

Capacity is determined through a combination of train speed, length of trains, route conflicts, signaling and track switching operations. In Detroit, a number of these issues are causing problems.

- Train Speeds. Due to the layout and the historical development of the routes in the Detroit area, train speeds are restricted at many of the junctions because of the curves in the tracks, track conditions, inadequate signaling or railroad operating rules. Trains operating at 10 mph occupy track junctions 2.5 times longer than trains operating at 25 mph.

  Examples:
  - Milwaukee Junction and Bay City Junction have severe curves restricting speeds to just 10 mph.
  - Delray does not have adequate signaling equipment, so trains must operate at less than 20 mph.